

DO NOT DUPLICATE



Curriculum Snapshot

Chemistry
November 14, 2011



Birdville Independent School District

1 Which of the following best describes the relationship that exists between frequency and wavelength of light?

- A** As wavelength decreases frequency remains unchanged.
- B** As wavelength increases frequency remains unchanged.
- C** As wavelength increases frequency decreases.
- D** As wavelength increases frequency increases.

Electromagnetic Spectrum

Cosmic Rays	Gamma Rays	X-rays	Ultraviolet Light	Visible Light	Infrared	Microwaves	Radio Waves
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2 The illustration of the electromagnetic spectrum displays the different types of electromagnetic radiation in increasing wavelength. Which of the following statements best summarizes the importance of understanding the electromagnetic spectrum in reference to the atom?

The electromagnetic spectrum provides information about the –

- A** location, movement, and energy of electrons in an atom
- B** charge of the nucleus in comparison to the charge of electrons
- C** number of electrons, protons, and neutrons in an atom
- D** atomic number and atomic mass of an atom

3 When calcium is burned in a flame it emits light with a measured wavelength of 422.7 nm. Calculate the frequency of the emitted light.

- A** $2.802 \times 10^{-31} \text{ s}^{-1}$
- B** $7.097 \times 10^5 \text{ s}^{-1}$
- C** $1.268 \times 10^{11} \text{ s}^{-1}$
- D** $7.097 \times 10^{14} \text{ s}^{-1}$

4 What wavelength of radiation has photons with energy of $3.37 \times 10^{-19} \text{ J}$?

A $1.69 \times 10^{15} \text{ nm}$

B $1.69 \times 10^6 \text{ nm}$

C $590. \text{ nm}$

D $5.90 \times 10^{-7} \text{ nm}$

Lithium Isotopes

Isotope	Relative Abundance (%)
Lithium – 6	7.42
Lithium – 7	92.58

5 How would the data presented in the table be manipulated to calculate average atomic mass of the element?

A $(6 \times 0.0742) + (7 \times 0.9258)$

B $(0.06 \times 7.42) + (0.07 \times 92.58)$

C $\frac{(7.42 + 92.58)}{2}$

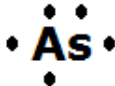
D $\frac{(6 \times 7.42) + (7 \times 92.58)}{2}$

Isotopic Composition Element X

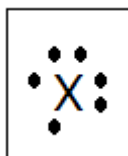
Isotope Relative Abundance (%)	Mass (amu)
45.50	310.00
26.78	307.85
26.60	315.13
1.12	303.42

- 6 Using the isotopic composition provided calculate the average atomic mass of the unknown element to the nearest hundredth of an atomic mass unit.
- A 25.00 amu
 - B 309.10 amu
 - C 310.72 amu
 - D 341.30 amu
- 7 Chromium has four isotopes. Based on the mass of each isotope given in the periodic table which isotope would be predicted to be found in the greatest percentage in nature?
- A Chromium - 50
 - B Chromium - 52
 - C Chromium - 53
 - D Chromium - 54

Arsenic

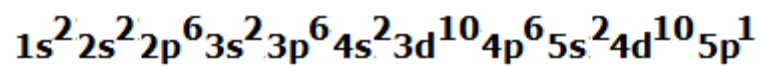
Electron Configuration	Lewis Valence Electron Dot Structure
$1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^3$	

- 8 What relationship exists between the electron configuration and Lewis dot structure for the electrons in an atom of arsenic? Both arrangements identify the –
- A total number of electrons in the atom
 - B highest energy level in which the electrons are located
 - C number of orbitals in which the electrons are located
 - D number of electrons in the highest energy level



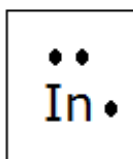
- 9 What can be concluded about the arrangement of electrons in an atom of element X with the Lewis valence electron dot structure diagrammed above?
- A 2 pairs of electrons exist in the *d* orbital along with 2 unpaired electrons; 1 in the *s* orbital and 1 in the *p* orbital
 - B 2 pairs of electrons exist; 1 in the *s* orbital and 1 in the *p* orbital along with 2 unpaired electrons in the *p* orbital
 - C 3 pairs of electrons exist in the *d* orbital
 - D 3 pairs of electrons exist in the *p* orbital

Electron Configuration

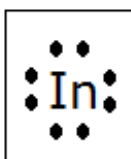


- 10 How would the electron configuration above be interpreted by a student assigned to diagram the corresponding Lewis valence electron dot structure?

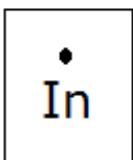
A



C



B



D

